

Lesson Plan
4th grade

The Greedy Triangle

Materials Needed:

Greedy Triangle book
One set of tangrams per student
Paper and pencils

by Marilyn Burns

Scholastic Press, 1994

Mathematical Goals for the lesson:

The students will gain a deeper understanding of different types of quadrilaterals (specifically, rectangle, square, rhombus, parallelogram, trapezoid, and kite) and will be able to recognize them in real-life settings and be able to create them using tangrams. Students will also develop their spatial visualization skills.

GLCE's addressed by the lesson:

G.GS.04.02 Identify basic geometric shapes including isosceles, equilateral, and right triangles, and use their properties to solve problems.

G.GS.03.04 Identify, describe, compare, and classify two-dimensional shapes, e.g., parallelogram, trapezoid, circle, rectangle, square, and rhombus based on their component parts (angles, sides, vertices, line segment) and on the number of sides and vertices.

Brief Description of the Lesson:

Read the story to the class, stopping to identify examples of the different shapes in the pictures. Students may wish to brainstorm other places they see triangles, quadrilaterals, etc in real life as well.

After finishing the story and discussing any connections students would like to make (text to self, text to world, text to text), focus students' attention on the quadrilateral page. Look at the examples of quadrilaterals given and name the type of quadrilateral they are (all are squares or rectangles). Ask students to name other types of quadrilaterals they know and to draw an example or state where that type of quadrilateral might show up in real-life. (For example, typically a window box is an isosceles trapezoid and a kite that you fly in the sky is also a kite mathematically. A rhombus is a common shape on many quilts [they are often put together to make stars on quilts] and a parallelogram looks like the side of a thick book when you slide the top cover over).

Students may not come up with real-life examples of all of the different types of quadrilaterals...that is ok. Once students have shared the types of quadrilaterals they can think of, ask them to create some specific quadrilaterals using some or all of the tangram pieces. For example, students can be asked to create:

1. An isosceles trapezoid using any number of tangram pieces (I like to leave the number open to make the task more accessible to students. Students who find one way can be encouraged to find another way, with the ultimate challenge being to make the shape using all 7 tangram pieces).
2. A trapezoid that has exactly two right angles.
3. A square.
4. A parallelogram
5. A rectangle

6. A right isosceles triangle

Along the way, as students share the shapes they have made, ask them to justify how they know the shape they made is a trapezoid or a parallelogram. What properties does it have?

Possible Extensions:

Have students cut out two congruent triangles out of heavy paper. These triangles should be different from the triangles in the tangram set (not right isosceles). Encourage them to cut out scalene obtuse triangles or acute isosceles triangles, or obtuse isosceles triangles, for example. Have them put their two triangles together to make as many different quadrilaterals as they can. Students should trace the quadrilaterals they find onto paper and write down what type of quadrilateral they created. If students cut out isosceles triangles, they can make parallelograms or rhombi. If students cut out scalene triangles, they can make parallelograms, but not rhombi.